What is claimed is:

1. A process for producing a blood plasma-derived IαIp composition comprising a mixture of inter-alpha inhibitor protein (IαI) and pre-alpha protein (PαI), wherein the IαI and the PαI are present in said mixture in a physiological proportion, the process comprising:

isolating from blood plasma a plasma fraction containing IαI and PαI, wherein the IαI and PαI are present in a physicological proportion; and

purifying the plasma fraction to obtain an IαIp composition with a purity of IαIp ranging from about 85% to about 100% pure.

2. The process of claim 1, wherein the isolating is by solid phase extaction.

3. The process of claim 2, wherein the solid phase extraction is by DEAE Sephadex.

4. The process of claim 1, wherein the isolating comprises chromatographing blood plasma.

5. The process of claim 4, wherein the chromatographing comprises anion-exchange chromatography.

6. The process of claim 5, wherein the anion-exchange chromatography is particle-based.

7. The process of claim 6, wherein the particles contain immobilized anion-exchange groups such as DEAE Sepharose, DEAE Sephadex A50, Toyopearl DEAE, TMAE Fractogel, DEAE Fractogel, or Q-Sepharose.

8. The process of claim 4, wherein chromatographing blood plasma is by monolithic support.

9. The process of claim 8, wherein the monolitihic support is CIM with immobilized anion-exchange ligands such as DEAE-CIM or Q-CIM.

10. The process of any preceding claim, wherein the plasma fraction comprises a side fraction obtained from the purification of clotting factor IX.

11. The process of any preceding claim, wherein the plasma fraction comprises a side fraction from the purification of a prothrombin complex concentrate.

12. The process of any preceding claim, wherein the plasma fraction is isolated as a cryosupernatant resulting from cryoprecipitation of blood plasma.

13. The process of any preceding claim, wherein the plasma fraction is cryo-poor plasma.

14. The process of any preceding claim, wherein the plasma fraction is human, primate, bovine, porcine, feline, or canine.

15. The process of any preceding claim, further comprising obtaining blood.

16. The process of any preceding claim, further comprising obtaining blood plasma.

17. The process of any preceding claim, further comprising obtaining a side fraction obtained from the purification of clotting factor IX.

18. The process of any preceding claim, further comprising obtaining a side fraction from the purification of a prothrombin complex concentrate.

19. The process of any preceding claim, further comprising obtaining a cryosupernatant resulting from cryoprecipitation of blood plasma.

20. The process of any preceding claim, further comprising obtaining cryo-poor plasma.

21. The process of any preceding claim, wherein the purifying is by hydroxylapatite chromatography.

22. The process of any of claims 1-21, wherein the purifying is by affinity chromatography.

23. The process of claim 22, wherein the affinity chromatography is heparin.

24. The process of any of claims 21, wherein the purifying is by ion-exchange chromatography and hydroxylapatite chromatography.

25. The process according to any preceding claim, wherein the IαI and PαI present in the plasma fraction have an apparent molecular weight of between about 60,000 to about 280,000 kDa.

26. The process of claim 25, wherein the molecular weight is determined by sodium dodecyl sulfate polyacrylamide gel electrophoresis

27. The process of any preceding claim, further comprising further purifying the plasma fraction.

28. The process of claim 27, wherein the further purifying is by passing to heparin affinity column and collecting the flow through (unbound) fraction.

29. The process of any preceding claim, further comprising virus inactivating the plasma fraction and/or the purified IαIp.

30. The process of claim 29, wherein the virus inactivating is by a solvent/detergent treatment or thermal inactivation.

31. The process of claim 30, wherein the thermal inactivation is at a temperature of between about 55 to about 65°C or dry heat at 70 to 120°C.

32. The process of claims 29, further comprising the addition of stabilizers.

33. The process of claim 29, further comprising pasteurization of the purified IαIp or dry heat at between about 70 and about 120°C.

34. The process of any preceding claim, further comprising anion-exchange chromatography of the purified IαIp.

35. The process of claim 34, wherein the anion-exchange chromatography is DEAE Sepharose.

36. The process of any preceding claim, wherein the IαIp composition has a half-life of greater than 1 hour.

37. The process of any of claims 1-36, wherein the IαIp composition has a half-life of greater than 5 hours.

38. The process of any preceding claim, wherein the IαIp composition has a high trypsin inhibitory specific activity.

39. The process of claim 38, wherein the trypsin inhibitory specific activity is between about 1000 to about 2000 IU/mg.

40. A composition of IαIp comprising a mixture of inter-alpha inhibitor protein (IαI) and pre-alpha protein (PαI), wherein the IαI and the PαI are present in said mixture in a physiological proportion ranging from about 85% to about 100% pure.

41. The composition of claim 40, wherein the IαIp comprises between about 60% to about 80% IαI and between about 40% to about 20% PαI.

42. The composition of claim 40, wherein the physiological proportion is the ratio of IαI to PαI that appears naturally in human plasma.

43. The composition of claim 40, wherein the proteins are used to treat a human disease.

44. The composition of claim 43, wherein the human disease is acute inflammatory disease, sepsis, severe shock, septic shock, rheumatoid arthritis, cancer, cancer metastasis, trauma/injury, infectious disease, and preterm labor.

45. The composition of claim 40, further comprising a stabilizing agent.

46. The composition of claim 45, wherein the stabilizing agent is albumin, polyethylene glycol, alpha,alpha-trehalose, amino acids, salts, glycerol, omega-amino acids, sugar, or combinations thereof.

47. A composition of IαIp comprising a mixture of inter-alpha inhibitor protein (IαI) and pre-alpha protein (PαI), wherein the IαI and the PαI are present in said mixture in a physiological proportion and a high trypsin inhibitory specific activity.

48. The composition of claim 47, wherein the IαIp comprises between about 60% to about 80% IαI and between about ~~40% to about 20% PαI.~~

49. The composition of claim 47, wherein the physiological proportion is the ratio that appears naturally in human plasma.

50. The composition of claim 47, wherein the proteins are used to treat a human disease.

51. The composition of claim 50, wherein the human disease is acute inflammatory disease, sepsis, severe shock, septic shock, rheumatoid arthritis, cancer, cancer metastasis, infectious disease, and preterm labor.

52. The composition of claim 47, further comprising a stabilizing agent.

53. The composition of claim 52, wherein the stabilizing agent is albumin, polyethylene glycol, alpha,alpha-trehalose, amino acids, salts, glycerol, omega-amino acids, sugar or combinations thereof.

54. A composition of IαIp comprising a mixture of inter-alpha inhibitor protein (IαI) and pre-alpha protein (PαI), wherein the IαI and the PαI are present in said mixture in a physiological proportion and have a half life of greater than one hour.

55. The composition of claim 54, wherein the IαIp comprises between about 60% to about 80% IαI and between about 40% to about 20% PαI.

56. The composition of claim 54, wherein the IαIp composition has a half life of at least 5 hours.

57. The composition of claim 54, wherein the IαIp composition has a half life of at least 10 hours.

58. The composition of claim 54, wherein the physiological proportion is the ratio that appears naturally in human plasma.

59. The composition of claim 54, wherein the proteins are used to treat a human disease.

60. The composition of claim 59, wherein the human disease is acute inflammatory disease, sepsis, severe shock, septic shock, rheumatoid arthritis, cancer, cancer metastasis, infectious disease, and preterm labor.

61. The composition of claim 54, further comprising a stabilizing agent.

62. The composition of claim 61, wherein the stabilizing agent is albumin, polyethylene glycol, alpha,alpha-trehalose, amino acids, salts, glycerol, omega-amino acids, sugar, or combinations thereof.

63. A composition of IαIp comprising a mixture of inter-alpha inhibitor protein (IαI) and pre-alpha protein (PαI), wherein the IαI and the PαI are present in said mixture in a physiological proportion comprising a light chain of inter-alpha inhibitor protein associated with at least one of three heavy chains H1, H2 and H3.

64. The composition of claim 63, wherein the IαIp comprises between about 60% to about 80% IαI and between about 40% to about 20% PαI.

65. The composition of claim 63, wherein the physiological proportion is the ratio of IαI to PαI that appears naturally in human plasma.

66. The composition of claim 63, wherein the proteins are used to treat a human disease.

67. The composition of claim 66, wherein the human disease is acute inflammatory diseases, sepsis, severe shock, septic shock, rheumatoid arthritis, cancer, cancer metastasis, and infectious diseases.

68. The composition of claim 63, further comprising a stabilizing agent.

69. The composition of claim 63, wherein the stabilizing agent is albumin, polyethylene glycol, alpha,alpha-trehalose, amino acids, salts, glycerol, omega-amino acids, sugar or combinations thereof.

70. A composition of IαIp comprising a mixture of inter-alpha inhibitor protein (IαI) and pre-alpha protein (PαI), wherein the IαI and the PαI are present in said mixture in a physiological proportion comprising a light chain of inter-alpha inhibitor protein associated with at least one of four heavy chains H1, H2, H3 and H4.

71. The method of claim 70, wherein the IαIp comprises between about 60% to about 80% IαI and between about 40% to about 20% PαI.

72. The composition of claim 70, wherein the physiological proportion is the ratio of IαI to PαI that appears naturally in human plasma.

73. The composition of claim 70, wherein the proteins are used to treat a human disease.

74. The composition of claim 73, wherein the human disease is acute inflammatory disease, sepsis, severe shock, septic shock, rheumatoid arthritis, cancer, cancer metastasis, infectious disease, and preterm labor.

75. The composition of claim 70, further comprising an stabalizing agent

76. The composition of claim 75, wherein the stabilizing agent is albumin, polyethylene glycol, alpha, alpha-trehalose, amino acids, salts, glycerol, omega-amino acids, or combinations thereof.

77. A composition of IαIp comprising a mixture of inter-alpha inhibitor protein (IαI) and pre-alpha protein (PαI), wherein the IαI and the PαI are present in said mixture in a physiological proportion that is made according to any of claims 1-39.

78. The composition of any of claims 40-77, further comprising an additional therapeutic agent.

79. The composition of claim 78, wherein the additional therapeutic agent is an anticancer agent, an anti-inflammatory agent, an anti-coagulant or an immunmodulator.

80. A pharmaceutical composition comprising a therapeutically effective composition of any of claims 40, 47, 54, 63, 70 or 77 and a pharmaceutically acceptable carrier.

81. A method of treating an inflammation related disorder, cancer, or an infectious disease in a subject comprising, administering a therapeutically effective amount of IαIp produced by the process of any of claims 1-39.

82. The method of claim 81, wherein the IαIp is isolated from a subject.

83. The method of claim 82, wherein the subject is a human, cow, pig, goat, or primate.

84. The method of claim 81, wherein the IαIp is administered as a tablet, capsule, or injectables.

85. The method of claim 81, wherein the IαIp is at least 85% pure.

86. The method of claim 81, wherein the IαIp is between about 85% to about 100% pure.

87. The method of claim 81, wherein the IαIp comprises between about 60% to about 80% IαI and between about 40% to about 20% PαI.

88. A method of treating a subject for acute inflammatory disease, sepsis, severe shock, septic shock, rheumatoid arthritis, cancer, cancer metastasis, infectious disease, or preterm labor, comprising:

(a) determining the pre-treatment level of one or more of the following levels in a subject:

(i) the level of IαI;

(ii) the level of PαI;

(iii) the level of IαIp;

(iv) the level of H3;

(v) the level of H4;

(vi) the level of H1;

(vii) the level of H2; and

(viii) the level of LC; and

(b) administering a therapeutically effective amount of IαIp to the subject.

89. The method of claim 88, further comprising:

(c) determining the post-treatment level of one or more of levels after an initial period of treatment with IαIp,

wherein a modulation in the level of IαIp is an indication that the treatment is producing a favorable clinical response.

90. The method of claim 89, wherein the modulation is an increase in the level of IαIp.

91. The method of claim 88, wherein the level of IαI, PαI, IαIp, H3, H4, H1, H2, and LC are determined by immunological methods.

92. The method of claim 88, wherein the subject is identified as having inflammation, tumor invasion, tumor metastasis, sepsis, septic shock, rheumatoid arthritis, preterm labor, cancer, or an infectious disease.

93. The method of claim 88, wherein the initial period of treatment is the time required to achieve a steady-state plasma concentration of the IαIp.

94. The method of claim 88, further comprising administration of an additional therapeutic agent.

95. The method of claim 94, wherein the additional therapeutic agent is an anticancer agent, an anti-inflammatory agent, an anti-coagulant or an immunmodulator.

96. A method for predicting a response to an IαIp therapy, comprising:

assaying a sample obtained from a subject to detect the level of one or more of the following:

(i) IαI;
(ii) PαI;
(iii) IαIp;
(iv) H3;
(v) H4;
(vi) H1;
(vii) H2; and
(viii) LC;

wherein the detected levels identifies a subject that may respond favorable to IαIp therapy.

97. The method of claim 96, wherein the detected level is a decrease in the level of IαI and PαI.

98. A method of monitoring the progress of a subject being treated with an IαIp therapy, comprising:

(a) determining the pre-treatment level of one or more of the following levels, in a subject:

(i) the level of IαI;
(ii) the level of PαI;
(iii) the level of IαIp;
(iv) the level of H3;
(v) the level of H4;
(vi) the level of H1;
(vii) the level of H2; and
(viii) the level of LC;

(b) administering a therapeutically effective amount of IαIp to the subject; and

(c) determining the level of one or more of the levels in the subject after an initial period of treatment with the IαIp,

wherein an increase of the level in the subject following treatment with IαIp indicates that the subject is likely to have a favorable clinical response to treatment with IαIp.

99. A kit for IαIp therapy comprising one or more of the following:

(i) IαI;

(ii) PαI;

(iii) IαIp;

(iv) H3;

(v) H4;

(vi) H1;

(vii) H2; and

(viii) LC; and

instructions for therapeutic use.

100. A composition comprising a container including IαIp and a label or package insert with instructions for administering the IαIp to a subject.

101. A kit comprising a composition of any of claims 40, 47, 54, 63, 70 or 77 and instructions for therapeutic use.